

88. (New) A method for operating an internal combustion engine, said method comprising the steps of:

directing a first air charge to a cylinder through a first intake port;
directing air to the cylinder through a second intake port having an intake valve cooperating therewith, the intake valve opening and closing during a compression stroke of a piston cooperating with the cylinder; and
adjusting the air charge density within the cylinder, thereby providing a charge density greater than that which could be produced by the first air charge and the compression ratio of the engine.

REMARKS

This Amendment is in response to the FINAL outstanding Office Action dated June 21, 2002. Because there is apparent confusion as to which claims remain pending in this case, Applicant has specifically canceled claims 1-25, 27, 29-35, 41, 51, 58, 61, and 65-71. Numerous of the canceled claims were previously withdrawn by virtue of Applicant's prior amendments or by election in response to the earlier issued Restriction Requirement. These claims have all been canceled without prejudice, and Applicant reserves the right to re-introduce and argue for patentability of identical or similar claims in continuing or future applications.

Upon entry of the above amendment, Claims 26, 28, 36-40, 42-50, 52-57, 59, 60, 62-64, and new claims 72-88 are pending in this case. Applicant requests reconsideration of the above-referenced application.

Applicant has taken the following actions, or makes the following remarks, in response to the outstanding Office Action:

A. **Regarding allowed claims 42-45, 49 and 50.** Applicant appreciates and accepts the indication of allowance of these claims.

B. Regarding the Section 112 rejection of claims 28, 37, 39, 46, 48, 55 and 57. Applicant has made appropriate amendment to these claims, which are believed to overcome the referenced rejection.

C. Regarding Claim 47. Though rejected in the Office Action, it is believed that this claim 47 is allowable as written, since no section 112 clarification is mentioned in the Office Action.

D. Regarding the Section 102(b) rejection of Claims 25, 29, 34, 35, 36 and 38. Applicant has hereby canceled claims 25 and 35; claims 29 and 34 were previously withdrawn (by the prior election of Group III), and have furthermore been canceled hereby; and claims 36 and 38 have been made dependent upon what Applicant submits to be allowable claims (see below). These amendments are believed to render this rejection moot. Nonetheless, Applicant traverses the rejection and the grounds for rejection, and does not admit that the Mallory '456 reference anticipates any of the subject claims.

E. Regarding the Section 102(b) rejection of Claims 51, 52, 53, 54, 56, 61 and 63. Applicant has hereby canceled claims 51 and 61; and claims 52, 53, 54, 56 and 63 have been made dependent upon what Applicant submits to be allowable claims (see below). These amendments are believed to render this rejection moot. Nonetheless, Applicant traverses the rejection and the grounds for rejection, and does not admit that the Mallory '176 reference anticipates any of the subject claims.

F. Regarding the section 103 rejection of claims 26, 28, 30, 37, 39 and 40. Claim 30 had been previously withdrawn (by the prior election of Group III), and has furthermore been canceled hereby; and claims 26, 28, 37, 39 and 40 have been made dependent upon what Applicant submits to be allowable claims (see below). These amendments are believed to render this rejection moot. Nonetheless, Applicant traverses the rejection and the grounds for rejection, and does not admit that either the Mallory '456 reference or the Okimoto or a combination thereof anticipates or renders obvious any of the subject claims.

G. Regarding the section 103 rejection of claims 55, 57, 59, 60 and 64. Claims 55, 57, 59, 60 and 64 have been made dependent upon what Applicant submits to be allowable claims (see below). These amendments are believed to render this rejection moot. Nonetheless, Applicant traverses the rejection and the grounds for rejection, and does not admit that either the Mallory '176 reference or the Okimoto or a combination thereof anticipates or renders obvious any of the subject claims.

H. Regarding Objected to Claims 27, 41, 58 and 65. These objected to claims have been rewritten in independent form as claims 72, 73, 74 and 75, respectively. These claims 72-75 are, therefore, believed to be in condition for allowance.

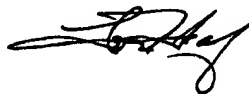
I. Regarding tentatively allowable claims 46, 47 and 48. As mentioned above, claims 46 and 48 claims have been made allowable by virtue of the amendments to address section 112 rejections, and claim 47 is believed to have been allowable as originally written.

J. Regarding new claims 76-88. New independent claims 76-88 expand on previously pending independent claims (see especially 25 and 35) and add limitations that Applicant believes, and hopes, place these claims in condition for allowance. These claims clearly distinguish over Mallory '456, Mallory '176, Okimoto, and all other known art, and combinations thereof.

CONCLUSION

Applicant respectfully submits that the present application, as amended herein, is now in condition for allowance. Applicant respectfully requests that the present application, with Claims 26, 28, 36-40, 42-50, 52-57, 59, 60, 61-64, and 72-88, be allowed. In order that Applicant may avoid missing deadlines, we respectfully request that the Examiner contact Applicant's undersigned attorney (at the below numbers) to discuss any remaining issues that might prevent and early allowance.

Respectfully submitted,



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APPENDIX A

The below reproduced claims indicate changes to the previously pending claims, by adding the underlined sections and deleting the sections in brackets ([]):

26. (Amended) The method of claim [25] 72 or 77, further comprising the steps of:
cooling the compressed air prior to entry thereof into the cylinder.
28. (Amended) The method of claim [25] 72 or 77, further comprising the steps of:
controlling the time of operation of a compressor generating the compressed air
and the timing of intake valves cooperating with the first and the second intake ports; and,
controlling one or more air charge characteristics selected from the group
consisting of turbulence, density, pressure, temperature, mean pressure and peak pressure.
36. (Amended) The method of claim [35] 73, 76, 78, or 79, wherein a first intake valve
cooperates with the first intake port and a second intake valve cooperates with the second
intake port, the second intake valve occupying an open position only while the first intake
valve occupies a closed position.
37. (Amended) The method of claim 36, further comprising the steps of:
controlling the time of operation of a compressor generating the compressed air
and the timing of the first and the second intake valves; and,
controlling one or more air charge characteristics selected from the group
consisting of turbulence, density, pressure, temperature, mean pressure and peak pressure.
38. (Amended) The method of claim [35] 73, 76, 78, or 79, wherein a first intake valve
cooperates with the first intake port and a second intake valve cooperates with the second
intake port, the second intake valve occupying an open position only during the
compression stroke.

39. (Amended) The method of claim 38, further comprising the steps of:
controlling the time of operation of a compressor generating the compressed air
and the timing of the first and the second intake valves; and,
controlling one or more air charge characteristics selected from the group
consisting of turbulence, density, pressure, temperature, mean pressure and peak pressure.
40. (Amended) The method of claim [35] 73, 76, 78, or 79, further comprising the steps of:
cooling the compressed air prior to entry thereof into the cylinder.
46. (Amended) The method of claim 45, further comprising the steps of:
controlling the time of operation of a compressor generating the high pressure air
charge and the timing of the first and the second intake valves; and,
controlling one or more air charge characteristics selected from the group
consisting of turbulence, density, pressure, temperature, mean pressure and
peak pressure.
48. (Amended) The method of claim 47, further comprising the steps of:
controlling the time of operation of a compressor generating the high pressure air
charge and the timing of the first and the second intake valves; and,
controlling one or more air charge characteristics selected from the group
consisting of turbulence, density, pressure, temperature, mean pressure and
peak pressure.
52. (Amended) The method of claim [51] 74, wherein the primary air charge is at a first
pressure and the secondary air charge is at a second pressure, the second pressure being
greater than the first pressure.

53. (Amended) The method of claim [51] 74, wherein the directing of the primary air charge into the cylinder is completed before the introducing of the secondary air charge into the cylinder.
54. (Amended) The method of claim [51] 74, wherein a first intake valve selectively occludes the first intake port and a second intake valve selectively occludes the second intake port, the first intake valve occupying an open position only while the second intake valve occupies a closed position.
55. (Amended) The method of claim 54, further comprising the steps of:
controlling the time of operation of a compressor generating the secondary air charge and the timing of the first and the second intake valves; and,
controlling one or more air charge characteristics selected from the group consisting of turbulence, density, pressure, temperature, mean pressure and peak pressure.
56. (Amended) The method of claim [51] 74, wherein a first intake valve cooperates with the first intake port and a second intake valve cooperates with the second intake port, the second intake valve occupying an open position only during the compression stroke.
57. (Amended) The method of claim 56, further comprising the steps of:
controlling the time of operation of a compressor generating the secondary air charge and the timing of the first and the second intake valves; and,
controlling one or more air charge characteristics selected from the group consisting of turbulence, density, pressure, temperature, mean pressure and peak pressure.
59. (Amended) The method of claim [51] 74, further comprising the step of:
cooling the primary air charge prior to entry thereof into the cylinder.
60. (Amended) The method of claim [51] 74, further comprising the step of:
cooling the secondary air charge prior to entry thereof into the cylinder.

62. (Amended) The method of claim [61] 75, further comprising the steps of :
directing air at a first pressure to the first intake port; and,
directing air at a second pressure to the second intake port.

64. (Amended) The method of claim [61] 75, further comprising the step of:
cooling the air directed into the cylinder.

Claims 72 – 75 are original claims 27, 41, 58, and 65 written in independent form, so there are, technically, no amendments.

Claims 76-88 are newly written claims, and are not reproduced here, since they will appear exactly as written above.